

Amendments to Specification

Replace the paragraph starting on page 2, line 37 with the following paragraph:

U.S. Patent No. ~~5,935,293~~ 5,874,134 to Rao et al., teaches a method of producing nanostructured material by hypersonically expanding a particle-gas mixture through a convergent nozzle and directing the resulting jet against an impaction substrate. Similar work has been described where nanosize particles with a narrow size distribution were generated by subsonically expanding thermal plasma carrying vapor-phase precursors through a convergent nozzle of a similar shape.

Replace the paragraph starting on page 6, line 32 with the following paragraph:

(b) a reaction chamber having an axially spaced entrance and an exit wherein in the vicinity of the exit, the homogenizer converges to nozzle tip, the entrance of the homogenizer being aligned with the inlet to the reaction chamber and the homogenizer being inserted within the reaction chamber and held in place by a homogenizer holder such that the homogenizer extends from the inlet end of the reaction chamber securely fitting against the inlet end for at least a portion of the homogenizer's overall length and wherein the homogenizer comprising two zones: (i) a spacer zone having a length, L_1 , extending from the reaction chamber entrance and ending where one or more reactant inlet tubes' are positioned, after having passed through a wall of the reaction chamber, to deliver one or more reactants into the reaction chamber so the reactants contact the hot carrier gas and (ii) a homogenization zone extending from the reactant inlet tubes' location to a position downstream of the quench gas inlets; and wherein carrier gas and reactants mix and react in the homogenization zone and pass through the flow homogenization exit nozzle to enter a quench zone of the reaction chamber defined by the quench gas inlet location in a reaction chamber wall and the reaction chamber outlet and wherein L_1 of the spacer zone must be long enough to have the hot gas flow attached to walls of the reaction chamber before the hot gas reaches the reactant inlets and the overall length ($L_1 + L_2$) of the reaction chamber is designed to a residence time sufficient that the following ~~three~~ tasks are completed before gas flow exiting the homogenizer: (1) gas flow in the reaction chamber has achieved a one-dimensional flow and concentration profile; and (2) gas-phase nucleation of product particles has been initiated.

Replace the paragraph starting on page 7 line 22 with the following paragraph:

(a) introducing a carrier gas into a reactor chamber having (i) axially spaced inlet and outlet ends along the reactor axis wherein positioned at the inlet end of the reactor chamber is a high temperature heating means to heat a carrier gas having a flow direction axially from the reaction chamber inlet downstream through the reaction chamber and out the chamber outlet

and wherein one or more quench gas inlets are positioned up stream from the outlet end of the reactor chamber for introducing a quench gas for cooling; and (ii) a reaction chamber having an axially spaced entrance and an exit wherein in the vicinity of the exit, the homogenizer converges to nozzle tip, the entrance of the homogenizer being aligned with the inlet to the reaction chamber and the homogenizer being inserted within the reaction chamber and held in place by a homogenizer holder such that the homogenizer extends from the inlet end of the reaction chamber securely fitting against the inlet end for at least a portion of the homogenizer's overall length and wherein the homogenizer comprising two zones: (i) a spacer zone having a length, L_1 , extending from the reaction chamber chamber entrance and ending where one or more reactant inlet tubes are positioned, after having passed through a wall of the reaction chamber, to deliver one or more reactants into the reaction chamber so the reactants contact the hot carrier gas and (ii) a homogenization zone extending from the reactant inlet tubes' location to a position down stream of the quench gas inlets; and wherein carrier gas and reactants mix and react in the homogenization zone and pass through the flow homogenization exit nozzle to enter a quench zone of the reaction chamber defined by the quench gas inlet location in a reaction chamber wall and the reaction chamber outlet and wherein L_1 of the spacer zone must be long enough to have the hot gas flow attached to walls of the reaction chamber before the hot gas reaches the reactant inlets and the overall length ($L_1 + L_2$) of the reaction chamber is designed to a residence time sufficient that the following ~~three~~ tasks are completed before gas flow exiting the homogenizer: (1) gas flow in the reaction chamber has achieved a near one dimensional flow and concentration profile; and (2) gas-phase nucleation of product particles has been initiated;

Replace the paragraph starting on page 14, line 6 with the following paragraph:

The reaction chamber described in the current invention includes a straight region and a convergent section, whereas the nozzles described in U.S. Patents (5,935,293 and 5,749,937) by Detering et al., and U.S. Patents (5,788,738 and 5,851,507) by Pirzada et al. all have a ~~[[divergent-]]~~ convergent-divergent shape.